USSR

UDC 669.14.018.[illegible]

DANICHEK, R. Ye., CHUYKO, N. M., PEREVYAZKO, A. T., PIROZHKOVA, [illegible], LITVINOVA, T. I., and SEMIKOPENKO, A. F., Dnepropetrovsk Metallurgical Institute

"Nonmetallic Inclusions in Structural Titanium-Containing Steels"

Novokuznetsk, Izv. VUZ, Chern. Metallurgiya, No 10, 1970, pp [illegible]

Abstract: The influence of the deoxidation mode on the content [illegible] composition of nonmetallic inclusions in structural titanium-containing [illegible] steels with two versions of smelting: the current technology, and [illegible] experimental technology involving preliminary deoxidation of the metal with aluminum and [illegible]-silicon alloy plus diffusion deoxidation with powders of 75% ferrosilicon ([illegible]-0.6%), aluminum (0.2-0.25%), and coke (0.2-0.3%). Sedimentary deoxidation with aluminum (0.07-0.08%) is performed before introducing the ferrotitanium. This deoxidation forms nonmetallic inclusions predominately composed of alumina, which facilitates their rapid removal from the metal. The improved deoxidation mode, in combination with protection of the stream of metal from secondary oxidation during casting, allowed the mean content of nonmetallic inclusions to be reduced from 0.0228 to 0.0146%. Rejection of castings was reduced from 11.5% to 0.8%.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202420016-2"

USSR

UDC 669.14.018292:549.12

LITVINOVA, T. I., RAYCHENKO, T. F., PIROZHKOVA, V. P., and MOSHKEVICH, L. D.

"Petrographic Investigation of Rough Globular Elements in ShKh15 Steel"

Moscow, Stal', No 2, Feb 71, pp 166-168

Abstract: The coarse, globular nonmetallic elements found in ShKh15 steel and determined by X-ray analysis to be largely of magnesian spinels, markedly debase the quality of the steel and adversely affect its characteristics, often leading to the discard of individual alloys. This article describes the method used by the authors to determine the phase state of these elements by the petrographic method, in which sections of the steel were examined under the microscope after metallographic study. The elements are from 100 to 150 microns in size, and were discovered in the ShKh15SG alloy as well as in the ShKh15, both manufactured by the "Dneprospetsstal'" plant. They can be classified in three groups, differing in shape, reflective capability, and behavior under polarized light. Most of them had the chemical composition of $2CaO \cdot SiO_2$. The petrographic examination, yielding results which agreed closely with the X-ray study, showed that the elements correspond in phase and structure to slag, from which they probably originate.

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1/2 024 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--INTERACTION OF CHROMIUM AND TITANIUM WITH A MAGNESITE REFRACTORY -U-

AUTHOR-(03)-LITVINOVA, T.I., RAYCHENKO, T.F., PIROZHKOVA, V.P.

COUNTRY OF INFO--USSR

SOURCE--OGNEUPORY 1970, 35(1), 46-9

DATE PUBLISHED----------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHROMIUM, TITANIUM, HIGH TEMPERATURE HEAT TREATMENT, REFRACTORY MATERIAL, MAGNESIUM OXIDE, CHEMICAL REACTION, CHROMATE, TITANATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/0916 STEP NO--UR/0131/70/035/001/0046/0049

CIRC ACCESSION NO--AP0113751

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0113751

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CR AND TE WERE MELTED AT 1800DEGREES FOR 20 MIN IN CRUCIBLES PREPD. FROM MAGNESITE OF D. 3.57 G-CM PRIME3, CONTG. MGO 92, CAO 1.10, FE SUB2 O SUB3 1.82, AL SUB2 O SUB3 0.50, AND SIO SUB2 2.74PERCENT. AS A BINDER, SULFITE,ALC. SPENT LIQUOR WAS USED. THE CRUCIBLES AFTER MELTING CR HAD A 0.5 MIM BROWNISH GREEN COVERING OF MGCR SUB2 O SUB4 SEPD. IN PERICLASE AND METALLIC CR. MELTING OF TI LED TO THE PRODUCTION OF A 3-5 MM THICK BLACK LAYER IN THE CRUCIBLE, CONTG. PERICLASE, MGTIO SUB3, AND TI OXIDES, MAINLY TIO.

UNCLASSIFIED

USSR

UDC 621.373.531(088.8)

SUKHOMLINOV, B. K., PIROZHNIKOV, V. D.

"Two-Phase Oscillator"

USSR Author's Certificate No 273269, Filed 21 Feb 69, Published 21 Oct 70 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4G215P)

Translation: An oscillator containing two transistorized blocking generators and a timing capacitor is proposed. In order to improve the stability of the pulse repetition rate, a bridge comprising RC-elements is included between the windings of the pulse transformer connected in series to the bases of semiconductor triodes, the timing capacitor and the power supply.

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USSR

UDC: 669.18:66.011.56

TREYSTER, Yu. Ya., IZMAYLOV, G. A., KLESHKO, O. B., KRASNOV, B. I., PIROZHNIKOV, V. Ye., All-Union Scientific Research Institute of Automation of Ferrous Metallurgy

"New Developments in the Automation of Steel Smelting Production"

Moscow, Metallurg, No 6, 1973, pp 21-24

Abstract: This article deals with new processes for the automation of steel production in accordance with the statement of the Central Committee of the Communist Party that implementation of the complex automation of technological processes is one of the decisive factors in the successful fulfillment of technical-economic aims. The All-Union Scientific Research Institute of Automation of Ferrous Metallurgy (VNIIAchermet) has done much to automate converters, various installations for continuous pouring of steel, arc steel smelting ovens, and electroslag remelting. A dynamic system for controlling the converter process has been put into use in the Chelyabinsk Metallurgical Plant; the block diagram of the operating algorithm for this system is reproduced and explained. The demand for continuous pouring of steel is being satisfied by an automatic system of continuous pouring using an all-purpose computer for controlling the converter shop of the "Azovstal'" metallurgical

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USSR

TREYSTER, Yu. Ya., et al., Metallurg, No 6, 1973, pp 21-24

plant. This system was developed by VNIIchermet in cooperation with the Ul'yanovsk State Pedagogical Institute "Metallurgavtomatika." The structural diagram for the system is also given. Other achievements in the field of automatic control of metallurgical production are cited and described.

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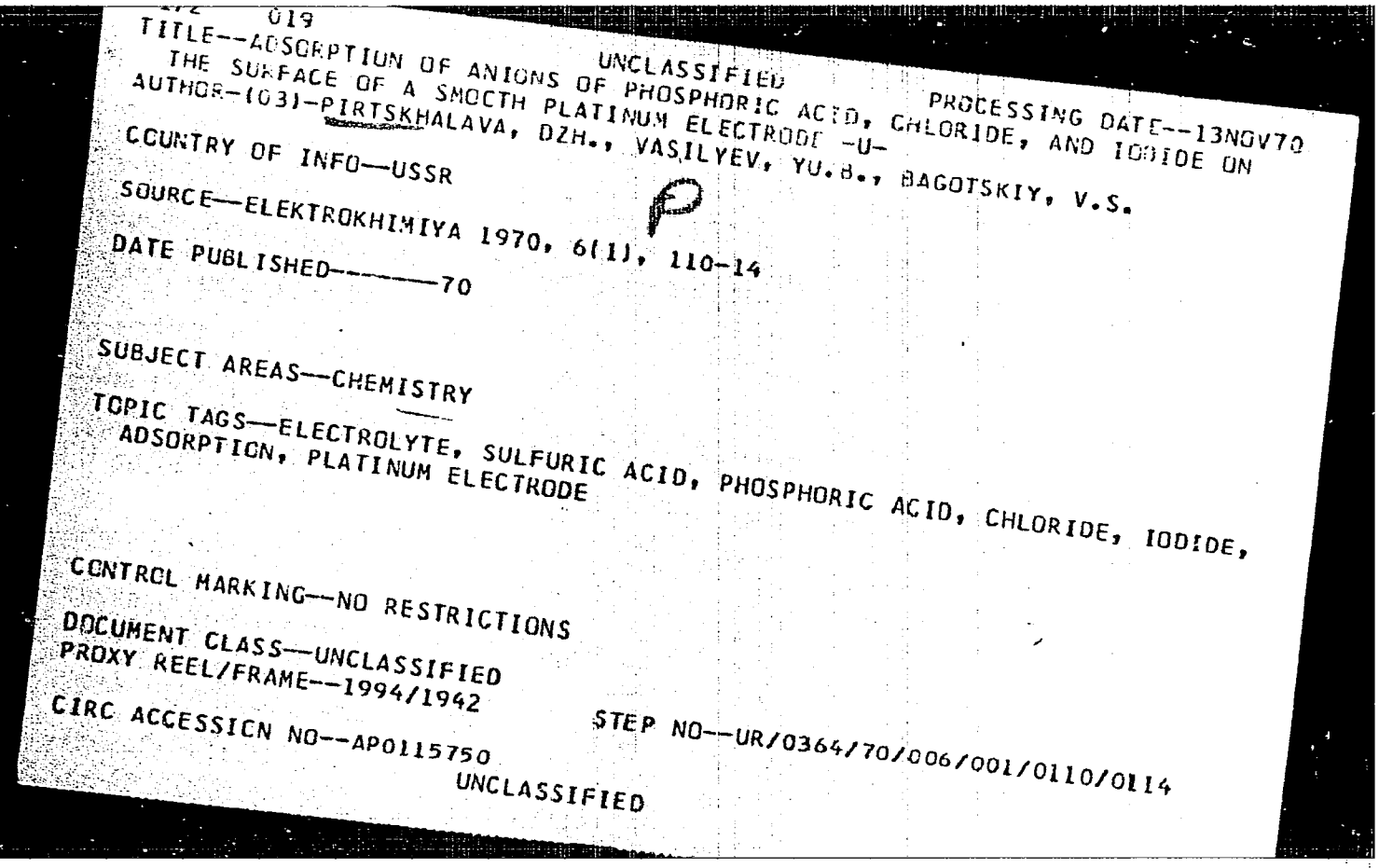

UNCLASSIFIED

019

TITLE--ADSORPTION OF ANIONS OF PHOSPHORIC ACID, CHLORIDE, AND IODIDE ON THE SURFACE OF A SMOOTH PLATINUM ELECTRODE -U-

PROCESSING DATE--13NOV70

AUTHOR-(03)-PIRTSKHALAVA, DZH., VASILYEV, YU.B., BAGOTSKIY, V.S.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKHIMIYA 1970, 6(1), 110-14

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ELECTROLYTE, SULFURIC ACID, PHOSPHORIC ACID, CHLORIDE, IODIDE, ADSORPTION, PLATINUM ELECTRODE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1942

STEP NO--UR/0364/70/006/001/0110/0114

CIRC ACCESSION NO--AP0115750

UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0115750

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STUDIES WERE CARRIED OUT IN 10 PRIME NEGATIVE7 TO 1N KCL AND KI SOLNS. WITH N H SUB2 SO SUB4 AS AUXILIARY ELECTROLYTE. THE EXTENT OF ANION ADSORPTION ON SMOOTH PT WAS DETD. FROM ITS EFFECT ON THE ADSORPTION OF H AND O. AT 0.1 V THE MAX. ADSORPTION OF I PRIME NEGATIVE WAS REACHED AT A CONCN. OF 10 PRIME NEGATIVE4 N. UNDER THESE CONDITIONS I OCCUPIED IS SIMILIAR TO 90PERCENT OF THE SPOT ON THE SMOOTH PT CAPABLE OF ADSORBING H. THIS WOULD CORRESPOND TO 1.9 TIMES 10 PRIME NEGATIVE9 G-ION-CM PRIME2 OF TOTAL SURFACE. FOR CL THE MAX. WAS REACHED AT GREATER THAN 0.3 V AND A CL PRIME NEGATIVE CONCN. IS GREATER THAN 10 PRIME NEGATIVE2 N. THE HIGHEST ADSORPTION WAS OBTAINED AT 0.7 V IN 0.1N KCL UNDER WHICH CONDITIONS IT WAS 1.6 TIMES 10 PRIME NEGATIVE9 G-ION-CM PRIME2. THE ADSORPTION ISOTHERM FOR H SUB3 PO SUB4 WAS HARD TO OBTAIN BECAUSE OF THE CHANGES OF PH WITH CHANGES OF CONCN. OF THE ACID AND BECAUSE OF THE COMPETITION IN THE ADSORPTION OF H SUB2 PO SUB4 PRIME NEGATIVE AND HSO SUB4 PRIME NEGATIVE. THE RATE OF ADSORPTION OF I PRIME NEGATIVE AT 0.4 V. WAS 4.69 THETA PER SEC., FOR CL PRIME NEGATIVE AT 0.6 V. IT WAS 3.2 TIMES 10 PRIME3 THETA PER SEC. AND FOR H SUB2 PO SUB4 PRIME NEGATIVE AT 0.7 V. WAS 6.7 TIMES 10 PRIME NEGATIVE3 THETA PER SEC. FACILITY: INST. ELEKTROKHIM., MOSCOW, USSR.

UNCLASSIFIED

USSR

VASILENKO, V. A., PIRUMOV, R. N., ROMANOV, A. N. UDC 8.74

"On Certain Problems in Teaching a Machine to Recognize Images"

V sb. Avtomat. upr. i vychisl. tekhn. (Automatic Control and Computer Technology -- Collection of Works), No. 10, Moscow, "Mashinostroyeniye", 1972, pp 74-103 (from RZh-Matematika, No 9, Sep 72, Abstract No 9V661)

Translation: The article discusses problems of teaching an automaton to recognize complex three-dimensional figures on the basis of their plane projections. Particular attention is given to a technique for teaching recognition in the presence of noise. Various principles for the processing of isoinformation during its input and output from the learning automaton are investigated. It is shown that the best results are achieved through differentiating conversion of the function for the clarity of the line of separation of the image and the transition to the description of input situations in the space of properties that is achieved during input of images into the computer. Certain practical recommendations are made on the basis of results obtained by the authors. 16 ref. Authors abstract.

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USSR

UDC 8.74

VASILENKO, V. A., PIRUMOV, R. N., ROMANOV, A. N.

"Some Problems of Training Pattern Recognition Machines"

V sb. Avtomat. upr. i vychisl. tekhn. (Automatic Control and Computer Engineering -- collection of works), Vyp. 10, Moscow, Mashinostroyeniye Press, 1972, pp 74-103 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V661)

Translation: A study was made of the problems of training automata to recognize complex three-dimensional figures by their two-dimensional projections. Special attention was given to the procedure for learning recognition in the presence of noise. Studies were made of various principles of data processing during input and output from the trained automaton. It was demonstrated that the best results have been achieved as a result of the differentiating transformation of the brightness function of the image scanning row and the transition to description of input situations in the space of the properties realized in the process of feeding the images to the digital computer. On the basis of the results obtained by the authors, defined practical recommendations are made. The bibliography has 16 entries.

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USSR

UDC 533.697.4

PIRUMOV, U. G.

"Three-Dimensional Subsonic and Supersonic Flows in Nozzles and Channels of Variable Cross Section"

Moscow, Prikladnaya Matematika i Mekhanika, No 2, 1972, pp 239-247

Abstract: In an investigation of this problem, the formulation of an inverse problem of Laval-nozzle theory is generalized for the case of three-dimensional flows; for its solution, an implicit three-point difference scheme, with variable spacing on the layer, is proposed. In the vicinity of the surface, on which Cauchy data are given, an asymptotic expansion into a series is constructed on the basis of the flow function, and a method for solving the corresponding equations is indicated. Examples of calculations of three-dimensional flows in nozzles are presented. Reference is made to three papers published to date, in which three-dimensional flows in nozzles are calculated by the three-dimensional method of characteristics, and to a 1958 paper in which analytic solutions in the vicinity of the nozzle center have been constructed. 3 figures. 11 references.

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USSR

UDC 533.697.4

PIRUMOV, U. G.

"Three-Dimensional Subsonic and Supersonic Flows in Nozzles and Conduits of Variable Cross-Sections"

Moscow, Doklady Akademii Nauk SSSR, Vol 203, No 1, Mar-Apr 72, pp 60-63

Abstract: The results of an investigation of three-dimensional subsonic and supersonic gas flows in nozzles and conduits of variable cross-section are presented. The inverse problem of the Laval nozzle theory, generalized for the case of a three-dimensional flow is formulated. An asymptotic expansion in series of stream function is constructed near the surface on which the Cauchy data is given, and a method for solution of corresponding equations is outlined. The geometry of the transverse cross-sections and stream lines of a three-dimensional nozzle with two planes of symmetry is presented.

USSR

UDC 533.697.4:532.55

KAMZOLOV, V. N., MASLOV, B. N., PIRUMOV, U. G., Moscow

"Study of the Trajectories of Particles in Lavale Nozzles"

Mekhanika Zhidkosti i Gaza, No 5, 1971, pp 136-143.

Abstract: A method is presented for calculating the trajectories and parameters of liquid or solid particles during flow of two phase streams through Lavale nozzles, allowing the number of particles precipitating onto the wall of the nozzle to be determined and the momentum loss phenomena related to this to be evaluated. A method is suggested allowing the known gas parameters to be used to produce an approximate determination of the trajectories and parameters of particles in the sub- and supersonic portions of the nozzles and to determine the number of particles striking the nozzle wall, to determine approximately the density, velocity and temperature of particles, to establish certain qualitative specifics of flow, in particular the formation near the nozzle walls of closed and open zones in which particles of a given size are absent. One defect of the method is that when calculating the movement of particles, changes in gas parameters caused by delay of particles are not considered.

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USSR

PIRUMOV, U. G. (Moscow)

"An Investigation of Two-Layer Gas Flows in Supersonic Axisymmetric Nozzles"

Moscow, Mekhanika Zhidkosti i Gaza, No 4, Jul-Aug 70, pp 76-81

Abstract: Two methods of calculating two-layer flows are described. The first method constitutes a generalization of a numerical method, solution of the inverse problem for the case of two-layer flows with shifting not taken into account. The second method is a method of characteristics for calculating a two-layer flow in a supersonic nozzle. Here the conventional method of characteristics is modified in order to provide the possibility of calculating a point on the separation line of layers having different adiabatic exponents, different total pressures, and temperatures. Also presented in the paper are results of the calculation of two-layer flows in nozzles with different adiabatic exponents and different gas-flow ratios in the layers. 6 Figures, 3 bibliographic entries.
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1/2 043 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--INVESTIGATION OF FLOW IN THE SUBSONIC AND TRANSONIC REGION OF A LAVAL NOZZLE -U-

AUTHOR--PIRUMOV, U.G.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, IZVESTIYA AKADEMII NAUK SSSR, MEKHANIKA ZHIDKOSTI I GAZA, NO 1, JAN-FEB 70, PP 53-63

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LAVAL NOZZLE, NOZZLE FLOW, FLOW VELOCITY, CALCUALTION, TRANSONIC FLOW

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/0210 STEP NO--UR/0421/70/000/001/0053/0063

CIRC ACCESSION NO--AP0103883

UNCLASSIFIED

2/2 043 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0103883

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN 1967 A METHOD WAS DEVELOPED BY THE AUTHOR BY MEANS OF WHICH IT WAS POSSIBLE TO CALCULATE THE SUBSONIC, TRANSONIC AND SUPERSONIC FLOW REGIONS IN A LAVAL NOZZLE, THIS METHOD BEING BASED ON A SOLUTION OF THE INVERSE PROBLEM OF NOZZLE THEORY, IN THE SOLUTION OF WHICH IS DETERMINED A FAMILY OF FLOW LINES CORRESPONDING TO A GIVEN DISTRIBUTION OF VELOCITIES AT THE AXIS. IN THE PRESENT ARTICLE, THIS METHOD IS USED TO CONDUCT A PARAMETRIC INVESTIGATION OF FLOW IN THE SUBSONIC AND TRANSONIC REGIONS BY VARYING THE PARAMETERS CHARACTERIZING THE DISTRIBUTION OF VELOCITIES ALONG THE AXIS AND SELECTING THEM IN SUCH A MANNER THAT THE SHAPE OF SOME FLOWLINE WOULD FULLY OR PARTLY CORRESPOND TO THE GIVEN NOZZLE CONTOUR. THE EFFECT OF THE ADIABATIC INDEX AND THE EFFECT OF THE SHAPE OF THE TRANSONIC REGION UPON FLOW IN THE SUPERSONIC REGION OF THE NOZZLE IS CONSIDERED. A COMPARISON IS MADE OF THE NUMERICAL SOLUTION WITH THE RESULTS OF SPECIAL EXPERIMENTS IN WHICH WAS INVESTIGATED THE FLOW IN NOZZLES CALCULATED ACCORDING TO THE ABOVE MENTIONED METHOD.

UNCLASSIFIED

USSR

PIRUMOV, U. G.

"Investigation of Flow in the Subsonic and Transonic Region of a Laval Nozzle"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 1, Jan-Feb 70, pp 53-63

Abstract: In 1967 a method was developed by the author by means of which it was possible to calculate the subsonic, transonic and supersonic flow regions in a Laval nozzle, this method being based on a solution of the inverse problem of nozzle theory, in the solution of which is determined a family of flow lines corresponding to a given distribution of velocities at the axis. In the present article, this method is used to conduct a parametric investigation of flow in the subsonic and transonic regions by varying the parameters characterizing the distribution of velocities along the axis and selecting them in such a manner that the shape of some flow-line would fully or partly correspond to the given nozzle contour. The effect of the adiabatic index and the effect of the shape of the transonic region upon flow in the supersonic region of the nozzle is considered. A comparison is made of the numerical solution with the results of special experiments in which was investigated the flow in nozzles calculated according to the above-mentioned method.

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USSR

UDC: 533.6.001.5

VILENSKIY, F. A., VOLKONSKAYA, T. G., GRYAZNOV, V. P., PIRUMOV, U. G., Moscow

"Investigation of Nonstandard Flow Conditions in an Axisymmetric Annular Plug Nozzle"

Moscow, Izv. AN SSSR: Mekhanika Zhidkosti i Gaza, No 4, Jul/Aug 72, pp 94-101

Abstract: The paper presents the results of calculations and experimental study of nonstandard flow conditions in an annular plug nozzle when the external pressure p_{ex} exceeds the pressure p^0 determined in the one--dimensional approximation from the ratio of the area of the output section of the nozzle to the area of the critical cross section. The method of characteristics is used to calculate the gas flow in the annular region enclosed between the free boundary and the edge of the plug under nonstandard conditions when $p_{ex} > p^0$. An experimental study is made of the flow, during which the static pressure was measured on the wall of the nozzle, and shadow photography was used to visualize the flow. The results of the experimental and theoretical study are given for a ring nozzle with $M^0 = 3.71$ and an ideal gas with constant adiabatic exponent 1.4.

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USSR

UDC 669.18-412:621.746.753

DAVYDOVA, L. N., PIRUSSKIY, M. V., and SUROVOVA, V. N.

"Increasing the Reistance of 17GIS Steel to Brittle Fracture After Ladle Refining With Liquid Synthetic Slags"

Moscow, Stal', No 9, Sep 72, pp 795-798

Abstract: A comparative study was made of the cold brittleness of four 17GIS steel smeltings (a standard sheet 12.5 mm thick) obtained by: the conventional open-hearth method (I), with synthetic slag refining (II), with refining and strengthening by vanadium additions (III), and with refining and strengthening by vanadium and nitrogen additions (IV). Treatment of 17GIS steel with synthetic slag leads to a substantial temperature reduction in the transition to the brittle state (20 to 30°) and ensures better deformability under restricted conditions. With the application of dynamic and static loads, the onset of cracks and the development of strains in viscous and mixed fracture in 17GIS steel refined with synthetic slag is substantially higher than in conventional open-hearth steel. Nitride strengthening also increases resistance to brittle fracture. Synthetic-slag-refined 17GIS steel with nitrogen additions satisfies the requirements for metal used for the construction of large-diameter (220-1420 mm) pipelines in northern regions.

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USSR

UDC 591.1.05

PIRUZYAN, L. A., GLEZER, V. M., DEMENT'YEV, V. A., LOMONOSOV, V. A. and CHIBRIKIN, V. M., Institute of Chemical Physics, Academy of Sciences USSR

"The Mechanism of the Biological Effect of Permanent Magnetic Fields"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 4, 1970, pp 535-539

Abstract: This review of the Soviet and foreign literature on the biological effect ofmagnetic fields discusses the effects of a permanent magnetic field on the electrical properties of axons, the rate of chemical reactions associated with free radicals in nervous tissue, the effects produced by impairment of spatial orientation of biomolecules, and conformational changes in protein mitochondria. The effects of a permanent magnetic field on electrolytes, water, and currents circulating in living systems are treated at some length.

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USSR

UDC 591.044

PIRUZYAN, L. A., BARSEGYAN, L. Kh., MUKHORTOVA, O. M., SAVCHENKO, G. S., and CHIBRIKIN, V. M., Institute of Chemical Physics, Academy of Sciences USSR

"Effect of a Permanent Magnetic Field on the Concentration of Free Radicals in Mouse Organs and Tissues"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 1, 1971, pp 128-132

Abstract: Exposure of mice to a permanent magnetic field (500 oersteds) for 4, 24, and 72 hours resulted in a marked decrease in the free radical content of the liver, spleen, kidneys, muscles, heart, and spleen (but not the brain). The low point, reached 2 to 7 days after the action was halted, varied with the organ and length of exposure, ranging from 28 to 55% of the control level. The normal concentration of free radicals was restored during the ensuing days. The maximum decrease in relation to the length of exposure up to 3 days was directly proportional to the square root of the exposure time, i.e., the effect of the

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USSR

PIRUZYAN, L. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 1, 1971, pp 128-132

magnetic field was not enhanced by increased exposure of up to 72 hours. Three days' exposure markedly increased the weight of the spleen but not that of the liver or kidneys. (The weight of the spleen remained abnormally high even on day 25, while the content of free radicals in the organ reached the normal level by day 20). Histological examination of the liver and kidneys revealed protein degeneration, impairment of the cytoplasmatic structure, and redistribution of the cytoplasm toward the nuclear and cellular membranes.

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USSR

UDC 591.104

FINAKOVA, G. V., ROMANOV, G. V. BYKOV, E. G., and PIRUZYAN, L. A., Institute of Chemical Physics, Academy of Sciences, USSR, Moscow

"The Effect of Permanent Magnetic Field Pretreatment on Histochemical Indexes of the Adrenal Cortex of X-ray-Irradiated Animals"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 6, Nov/Dec 73, pp 913-916

Abstract: Experimental results are reported on the effect of permanent magnetic field (PMF) and x-ray irradiation on the contents of sudanophilic lipids, keotsteroids, cholesterol and nonspecific esterase activity in the rat's adrenal cortex. Animals pretreated with PMF before irradiation did not show any more pronounced changes of the indexes studied in the first 72 hrs than those treated with x-ray alone. The data suggest that PMF pretreatment of animals prevents development of changes in the content of sudanophilic lipids, double refracting substances, nonspecific esterase activity characteristic of isolated x-ray treatment.

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USSR UDC: 591.104

BARSEGYAN, L. Kh., KAKUSHKINA, N. V., and PIRUZYAN, L. A.

"Change in Reaction of Oxyhemoglobin Transhemization in Mice After Exposure to a Constant Magnetic Field"

Moscow, Izvestiya Akademii nauk SSSR--Seriya biologicheskaya, No 5, 1972, pp 785-787

Abstract: This brief communication offers the results of a study of the action of a constant magnetic field of 5000 oersteds on the reaction of the transhemization of oxyhemoglobin (HbO_2) in mice after 24 hours. The reactions and the processing of the experimental data were performed by the known method of Blyumenfel'd and Charnyy, in 1950, and Blyumenfel'd in 1957. The experimental E_a of this reaction is the same as the E_a in the reduction reaction of HbO_2, which makes investigation of the transhemization reaction convenient for estimating the functional state of the hemoglobin. The authors find that the value of E_a they obtained for mice is the same as the value of E_a for the HbO_2 in dogs and the E_a of the reduction reaction of the oxyhemoglobin complex. They found also that the action of the magnetic field causes an

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USSR UDC: 591.104

BARSEGYAN, L. Kh., et al, Izvestiya Akademii nauk SSSR--Seriya biologicheskaya, No 5, 1972, pp 785-787

increase in E_a. Finally, they found an agreement between their results and those of Piruzyan, et al (1971) who showed that the change in the number of regular elements and the concentration of free radicals in the mice's blood is maintained for one or two weeks after exposure to the magnetic field, and then returns to normal in three weeks.

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Oncology

USSR

UDC 616.00.6

MARKUZE, I. I., AMBARTSUMYAN, R. G., and PIRUZYAN, L. A., Institute of Chemical Physics, Academy of Sciences USSR

"The Variation in K, Na, and Ca Ion Concentrations in the Ascitic Fluid of Animals With Tumors Following the Action of a Constant Magnetic Field"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 2, Mar/Apr 72, pp 268-272

Abstract: White mice were inoculated with tumor cells from the ascitic form of Sarcoma 37 and then, 1-13 days after inoculation, were exposed to a constant magnetic field of $5 \cdot 10^3$ oersteds for periods of 3-5 days. At various time intervals after cessation of exposure to the field, the mice were examined for changes in the concentrations of potassium, sodium, and calcium ions in the extracellular ascitic fluid. Statistically reliable increases of up to 50% were observed in the concentration of potassium ions. Given the same duration of exposure to the magnetic field, greater increases occurred during the early stages of development of the tumor and when measurements were taken immediately following exposure to the field. In fact, by the 6th day after cessation of exposure an increase in potassium ions could no longer be observed. The concentrations of sodium and calcium ions did not vary.

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USSR

UDC 591.105

PIRUZYAN, L. A., GLEZER, V. M., LOMONOSOV, V. A., BARSEGYAN, L. KH., KHAVKINA, L. S., Institute of Chemical Physics of the USSR Academy of Sciences

"Effect of a Constant Magnetic Field on the State of the Blood System of Mice"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 1, 1972, pp 142-145

Abstract: A study was made of the effect of a constant magnetic field on the state of the blood system and the free radical content in the blood of mice. The constant magnetic field intensity was 5,000 oersteds for exposure times of 4, 24 and 72 hours. After exposure to a constant magnetic field, the number of erythrocytes, reticulocytes and leukocytes in the blood of mice increases, the hemoglobin content increases, the erythrocyte production per cubic millimeter of blood per day increases, and the free radical content increases. A change in the qualitative composition of the erythrocytes expressed in an increase in the number of cells of increased stability is observed. A correlation between the number of erythrocytes, reticulocytes, the diurnal erythropoiesis and the variation in free radical activity of the blood of mice after the effect of a constant magnetic field were established. Analysis of the dynamics of the variations of the hemotologic indexes and free radical activity in the blood of mice after the effect of the constant magnetic

USSR

PIRUZYAN, L. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 1, 1972, pp 142-145

field shows that they are of a monotypic nature.

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USSR

UDC 577.391

ARTSRUNI, G. G., ROMANOV, G. V., KUTUZOV, A. D., and PIRUZYAN, L. A.,
Institute of Chemical Physics, Academy of Sciences USSR, Moscow

"Effect of an Electrostatic Field on the Survival Time of White Nonpurebred Mice After X-Irradiation"

Moscow, Izvestiya Akademii Nauk SSR, Seriya Biologicheskaya, No 3, 1973, pp 435-438

Abstract: Nonpurebred mice were subjected to whole-body irradiation at 500 r and then placed in a specially designed chamber where they were exposed to an electrostatic field of 1000 v/cm for 1 or 24 hours. More controls were alive 11 days after irradiation than experimental animals, but by day 30 the survival rate of the latter exposed to the electrostatic field for 1 and 24 hours was 27 and 36% higher, respectively. The higher initial mortality is attributed to the early biochemical changes triggered by the electrostatic field. Subsequent intensification of the oxidation-reduction processes prolonged the survival time of the more radioresistant animals.

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USSR

UDC 591.1:616-006

PIRUZYAN, L. A., KAPLAN, Ye. Ya., MAKSIMOVA, I. A., and ROZENFEL'D, M. A.,
Institute of Chemical Physics

"Changes in the Content of Free Radicals in Mouse Organs During Hypoxia and Hyperoxia"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 1, 1970, pp 93-99

Abstract: Experiments on mice showed that during hyperoxia changes in free radical activity are the same in the liver, heart, brain, lungs, and muscles. The content of free radicals increases on the 2nd day, decreases on the 3rd day, and increases markedly on the 4th day in all the organs. During hypoxia, changes in the concentration of free radicals are also the same in liver, spleen, brain, and lungs. Free radical concentration increases on the first day and after that decreases below control values. However, the rate of change varies from organ to organ. For example, in the lungs and spleen the free radical level falls below controls on the 3rd day and continues to fall thereafter, whereas in the brain and liver this pattern is not observed until the 4th day. It was suggested that changes occurring in free radical activity as a result of hypoxia and hyperoxia may be one of the factors responsible for the impairment of certain physiological systems and metabolic processes associated with these states.

1/2 022 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--MICROCALORIMETRIC INVESTIGATIONS OF THE PROCESS OF BLOOD COAGULATION -U-
AUTHOR-(03)-PIRUZYAN, L.A., ROZENFELD, M.A., GLEZER, V.M.

COUNTRY OF INFO--USSR

SOURCE--IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA, 1970, NR 2, PP 299-302
DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BLOOD COAGULATION, CALORIMETRY, THERMAL EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/0950 STEP NO--UR/0216/70/000/002/0299/0302

CIRC ACCESSION NO--AP0109107

UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0109107

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CALORIMETRIC METHOD WAS USED FOR THE STUDY OF THERMAL EFFECTS CONNECTED WITH BLOOD COAGULATION. THERMOGRAMS WERE OBTAINED FOR THE FIRST TIME AND THE TOTAL QUANTITY OF HEAT FREED OWING TO THE PROCESS OF BLOOD COAGULATION WAS DETERMINED. CALORIMETRIC DATA CORRELATED WELL WITH TROMBOELASTOGRAPHIC VALUES. THE HIGHLY SENSITIVE CALORIMETRIC METHOD MAY BE USED AS A NEW TEST FOR THE INVESTIGATION OF THE COMPLICATED PROCESS OF BLOOD COAGULATION.

FACILITY: INSTITUTE OF CHEMICAL PHYSICS, ACADEMY OF SCIENCES, USSR.

UNCLASSIFIED

USSR

UDC: 616.006

PIRUZYAN, L.A., ROGOVIN, V.V., ROMANOV, G.V., MERTSALOVA, L.V., and DEMENT'YEV, V.A., Institute of Chemical Physics, Academy of Sciences, USSR

"Electron Microscope Study of Harding-Passy Melanoma Under the Influence of Lasers"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 3, May/Jun 70, pp 463-467

Abstract: The effect of laser irradiation on the ultrastructure of Harding-Passy melanoma was studied. It was found that the zones which had not been irradiated directly contained irreversible changes. Mitochondria were most damaged, and their organization disrupted, whereas the myelin structures, nucleus and nucleoli, and virus-like formations showed no morphological changes. A strong vacuolization in the cytoplasm of the cells was noted. Temperature changes in melanoma tissue are proportional to the distance from the center of laser action. All changes in melanoma tissues under the action of lasers are explained on the basis of the thermomechanical effect.

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Acc. Nr: AP0047228 Ref. Code: UR 0216

PRIMARY SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, 1970, Nr 1, pp 93-97

Pruzyan, L. A.; Kaplan, Ye. Ya.;
Maksimova, I. A.; Rozenfel'd, M. A.

CHANGES IN THE CONTENTS OF FREE RADICALS (FR) IN THE ORGANS OF MICE UNDER CONDITIONS OF HYPO- AND HYPEROXY

Institute of Chemical Physics Academy of Sciences USSR

Experimental data are discussed bearing on the kinetics of changes in the contents of free radicals in mice organs under conditions of hyperoxy and hypoxy. In the case of hyperoxy the character of changes are similar in the liver, the heart, the brain, the lungs and the muscles. A tendency towards an increase of the free radicals contents in observed after 48 hours which is thereafter followed by a decrease after 72 hours. A fairly well expressed increase of free radical activity is observed in all the organs examined after 96 hours.

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REEL/FRAME
19790730

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AP0047228

An increase of the exposure time of hypoxy is followed by a monotonous character of changes of free radicals concentration in the liver, the brain and the lungs of the experimental animals.

During the first 25 hours an increase of free radicals activity is noted which is later followed by a decrease going below control figures.

However free radicals concentration changes rates are unequal in different organs.

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19790731

1/2 039 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--ELECTRONMICROSCOPICAL INVESTIGATION OF THE GARDING PASSY MELANOME UNDER THE INFLUENCE OF A QUANTUM GENERATOR -U-
AUTHOR-(05)-PIRUZYAN, L.A., ROGOVIN, V.V., ROMANOV, G.V., MERTSALOVA, L.V., DEMENTYEV, V.A.
COUNTRY OF INFO--USSR

SOURCE--IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA, 1970, NR 3, PP 463-467
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, PHYSICS

TOPIC TAGS--LASER RADIATION, ELECTRON MICROSCOPE, TUMOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/1176 STEP NO--UR/0216/70/000/003/0463/0467

CIRC ACCESSION NO--AP0126778

UNCLASSIFIED

2/2 039 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0126778

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF LASER IRRADIATION ON THE GARDING PASSY MELANOMA ULTRASTRUCTURE IS DISCUSSED. IT WAS FOUND THAT THE ZONES WHICH HAD NOT BEEN DIRECTLY ILLUMINATED CONTAINED IRREVERSIBLE CHANGES. AMONG THE ORGANELLES OF A GARDING PASSY MELANOMA CELL THE MITOCHONDRIA APPEARED TO BE MOST DAMAGED WHEREAS THE MYELIN STRUCTURES THE NUCLEUS AND THE NUCLEOLI AS WELL AS VIRUS LIKE FORMATIONS REVEALED NO MORPHOLOGICAL CHANGES. STRONG VACUOLIZATION OF THE CELL CYTOPLASM WAS STATED. A DIAGRAM OF THE TEMPERATURE CHANGES IN THE MELANOME TISSUE RELATIVE TO THE DISTANCE OF THE EPICENTER OF THE LASER LESION IS SHOWN. THE LESIONS CAUSED IN THE MELANOME CELL UNDER LASER ACTION ARE EXPLAINED ON THE BASIS OF THE EFFECT OF THE THERMOMECHANICAL FACTOR. FACILITY: INSTITUTE OF CHEMICAL PHYSICS, ACADEMY OF SCIENCES, USSR.

UNCLASSIFIED

USSR

UDC 612.273

MAKSIMOVA, I. A, MAKSIMOV, V. M., and PIRUZYAN, L. A., Department of Medical Biophysics, Institute of Chemical Physics, Academy of Sciences USSR, Moscow

"Quantitative Assessment of the Kinetics of Free Radicals in Organs of Animals Exposed to Hypoxia"

Leningrad, Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov, Vol 58, No 5, 1972, pp 773-778

Abstract: Data available on the concentration of free radicals in the organs of animals exposed to hypoxia (equivalent to an altitude of 6,000 m) for various periods were used to establish an empirical equation representing the concentration of any radical in any organ as a function of time. Curves plotted on the basis of values calculated by that equation satisfactorily coincide with curves plotted on the basis of the original experimental data, including a good agreement of point of interception with the coordinates as well as of maxima and minima. The error of calculation is about 2%. The equation has coefficients which are identical for all organs for the given degree of hypoxia, as well as coefficients which assume a different value for each particular organ. It is concluded that since the value of these coefficients significantly depends on the method of processing the

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MAKSIMOVA, I. A., et al., Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov, Vol 58, No 5, 1972, pp 773-778

experimental data, this method should be standardized and then, after further investigations, the equation may be expanded to be applicable to any degree of hypoxia or hyperoxia.

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PIRUZYAN L.A.

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CLASSIFICATION: UNCLASSIFIED

APPROVED FOR PUBLIC RELEASE, DISTRIBUTION UNLIMITED

TITLE: Effect of Laser Beams on Biological Objects

Vozdeystviye luchey kvantovogo generatora (lazera) na biologicheskiye ob'yekty

AUTHOR(S): Piruzyan, L. A.; Demene'yev, V. P.; Barseyan, L. Kh.; Savchenko, G. S.; Rogovin, V. V.; Hertsalova, L. V.; Romanov, G. V.

PAGES: 20

SOURCE: Paper Delivered at 42nd ASMA, Houston Texas
27 April 1971

ORIGINAL LANGUAGE: Russian

TRANSLATOR: DKM

NISC TRANSLATION NO. 3367

APPROVED P.T.K.

DATE 16 November 1972

PIRUZYAN, L. A. Lasers

EFFECT OF LASER BEAMS ON BIOLOGICAL OBJECTS

[redacted]

Paper delivered at 62nd ASM, Houston, Texas, 27 April 1971, Russian]

The present work investigates the effect of focussed and unfocussed neodymium-glass laser beams operating at 10,600 Å on pigmented and nonpigmented tissue in an attempt to explain the degree of damage to a biological structure as a function of its pigmentation.

Theoretical computations are made of the temperatures reached in tissue at different laser radiation energy levels, making possible a preliminary estimate of the temperature generated in the tissue at a given irradiation energy. Morphological investigations confirmed the theoretical computations of the temperature coefficients.

Electron microscope investigations have shown that when pigmented tissue is subjected to laser radiation, mitochondria are the most labile cellular structures. Their total or partial destruction is attributed to the thermomechanical effect of the laser beam that leads to great temperature and, subsequently, pressure drops which could be the main cause of the damage to the cristae and mitochondrial membrane.

Investigation of the concentration of free radicals in pigmented tissue subjected to an unfocussed laser beam has shown that low energy densities do not disturb the physical and chemical properties of the tissue that might impair biochemical processes.

The results of the investigation described above facilitate a deeper understanding of the problem of the effects of light on the activity and properties of living matter, since to date there has been no unified picture of such effects on biobjects encompassing the entire frequency spectrum from the far infrared to the ultraviolet. Besides the scientific interest involved in an explanation of the mechanism of action of a powerful light flux on biostructures, the investigation has important practical applications in space biology and medicine, especially related to the problem of ensuring astronaut protection against light effects.

The introduction of lasers into the arsenal of scientific laboratories has made it possible to begin investigations dealing with the effect of powerful light fluxes on biological objects. In this matter, the development of specific technical conditions for laser operation

PIRUZYAN, L.A.

(5)

UDC: 616.00[illegible]

ELECTRON MICROSCOPIC INVESTIGATION OF THE HARDING-PASSY MELANOMA UNDER THE EFFECT OF LASER RADIATION

[Article by L. A. Piruzyan, V. V. Popovin, G. V. Romanov, [illegible] Mertsalova, and V. A. Dement'yev; Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, Russian, No 3, 1970, pp [illegible]-466]

The article examines the effect of laser radiation on the ultrastructure of the Harding-Passy melanoma. It has been established that irreversible changes occurred in the zones not directly irradiated. The worst damaged organelles of a Harding-Passy melanoma cell were the mitochondria, whereas the myelin structures, the nucleus and the nucleoli, as well as the virus-like formations, revealed no morphological changes. Strong vacuolization was noted in the cell cytoplasm. A diagram of temperature changes in the melanoma tissue according to the distance from the epicenter of the laser lesion is presented. The disorders which occurred in the melanoma cell under the effect of the laser are explained as the effect of the thermomechanical factor.

The creation of lasers has permitted biophysicists to begin investigations connected with the effect of powerful luminous fluxes on biological objects. The literature contains information about the histological changes of malignant tumors (melanomas) after irradiation by a laser (Piruzyan et al, [illegible]) and also on the free-radical content in an irradiated melanoma (Piruzyan et al, 1968). Therefore it is of interest to explain affections in a tumor on the ultrastructural level.

In the present work a Harding-Passy melanoma was subjected to laser irradiation in order to investigate the electron

JPRS 57928
8 Jan 73

PIRUZYAN, L. A.

(4)

UDC: 577.391

FREE RADICALS IN HARDING-PASSY MELANOMA AFTER IRRADIATION BY AN UNFOCUSSED LASER BEAM

[Article by L. A. Piruzyan, L. Kh. [illegible], V. A. Dement'yev, and G. S. [illegible], Moscow; Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, Russian, No 1, 1968, pp 121-123]

Lasers are now finding wide application in biology and medicine (Piruzyan et al, 1967). The effect of a laser beam on a biological structure leads to temperature drops inside it which can affect physicochemical processes. In addition, when the energy densities are great, large temperature gradients form which can lead to disorder of the biological structure.

In experiments on various types of transplanted tumors it has been shown that at high energies laser radiation has an oncological effect (Ketcham and Minton, 1965; Pine et al, 1963; Minton and Ketcham, 1964).

It is known that physical factors such as gamma-radiation, ultraviolet and x-rays affect the concentration of free radicals in tissues.

Relatively recently Derr et al observed increase of the free-radical concentration in specimens of melanoma after irradiation with a focussed beam of a ruby laser at a dose of 100 joules as compared with unirradiated melanoma (Derr and Klein, 1964; Derr et al, 1965). Since the precision of determination was 30%, the authors considered those results preliminary.

Cases of the application of an unfocussed beam have been described. It was of interest to clarify the effect of an unfocussed laser beam on tumorous tissue irradiated once.

JPRS 57928
8 Jan 73

1/2 014 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--TEMPERATURE DEPENDENCE OF THE DAVYDOV SPLITTING IN ANTHRACENE -U-

AUTHOR--KURIK, M.V., PIRYATINSKIY, YU.P., POPEL, O.M., FROLOVA, E.K.

COUNTRY OF INFO--USSR

SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 37, NR 2, PP 803-806

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--TEMPERATURE DEPENDENCE, ANTHRACENE, PHOTOCONDUCTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0221 STEP NO--GE/0030/70/037/002/0803/0806

CIRC ACCESSION NO--AP0106877

UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0106877

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DAVYDOV SPLITTING FOR PHOTOCONDUCTIVITY AND ABSORPTION IN ANTHRACENE HAS BEEN MEASURED IN A WIDE TEMPERATURE RANGE. A PHENOMENOLOGICAL THEORY IS DEVELOPED WHICH EXPLAINS QUALITATIVELY THE OBSERVED REGULARITIES.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--TEMPERATURE DEPENDENCE OF THE DAVYDOV SPLITTING IN ANTHRACENE -U-

AUTHOR--KURIK, M.V., PIRYATINSKIY, YU.P., POPEL, O.M., FROLOVA, E.K.

COUNTRY OF INFO--USSR

SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 37, NR 2, PP 803-806

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--TEMPERATURE DEPENDENCE, ANTHRACENE, PHOTOCONDUCTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0221 STEP NO--GE/0030/70/037/002/0803/0806

CIRC ACCESSION NO--AP0106877

UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0106877

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DAVYDOV SPLITTING FOR PHOTOCONDUCTIVITY AND ABSORPTION IN ANTHRACENE HAS BEEN MEASURED IN A WIDE TEMPERATURE RANGE. A PHENOMENOLOGICAL THEORY IS DEVELOPED WHICH EXPLAINS QUALITATIVELY THE OBSERVED REGULARITIES.

UNCLASSIFIED

USSR UDC 669.721.018.9(088.8)

RYABUKHOV, S. I., KIMSTACH, G. M., PIRYAZEV, V. P., UTKIN, S. Ye., and MAYBORODA, M. V.

"Device for Production of Magnesium Alloy"

USSR Author's Certificate No 268450, Filed 30/12/66, Published 8/09/70 (Translated from Referativnyy Zhrunal-Metallurgiya, No 2, 1971, Abstract No 2 G189 P)

Translation: A device suggested for the production of an Mg alloy includes an induction furnace with a rotating mechanism and a mold. To decrease the expenditure of Mg and improve the properties of the alloy, the device is equipped with a replaceable mold, hermetically placed on the crucible of the induction furnace. A steel plate which is melted during the process of melting the alloy is placed between the induction furnace and the mold in order to decrease the free surface over the melt and eliminate cold surfaces which would condense the Mg from its vapors.

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1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--RAPID TITRIMETRIC DETERMINATION OF BORON IN SILICATES -U-

AUTHOR-(02)-PIRYUTKO, M.M., BENEDIKTOVALODOCHNIKOVA, N.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(1), 136-41

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--POTENTIOMETRIC TITRATION, BORON, SILICATE, SODIUM HYDROXIDE, METAL COMPLEX COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/1177 STEP NO--UR/0075/70/025/001/0136/0141

CIRC ACCESSION NO--AP0138192

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0138192

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DETN. OF B WITHOUT SEPG. THE INTERFERING ELEMENTS IS BASED ON POTENTIOMETRIC TITRN. OF BOROMANNITIC ACID WITH A 0.02N NAOH SOLN. TO PH 6.9 IN THE PRESENCE OF COMPLEXON III. F PRIME NEGATIVE DOES NOT INTERFERE. FUSE 0.1-0.4 G OF THE SILICATE WITH G NA SUB2 CO SUB3 IN THE PRESENCE OF A FEQ GRAINS OF KNO SUB3. LEACH THE MELT WITH H SUB2 O CONTG. SUCH AN AMT. OF HCL AS TO MAKE THE FINAL CONCN. 0.2N. IN THE PRESENCE OF MN(II), TI(IV), ZR(IV), FE(II), FE(III), AL(III), CR(III), AND CR(IV) ADD TO THE SOLN. 0.01M COMPLEXON III (IN THE PRESENCE OF MN(IV) AND TI(IV) ADD ALSO SOME H SUB2 O SUB2) AND BOIL; LARGER THAN OR EQUAL TO 30 ML COMPLEXON III DECREASES THE ACCURACY OF THE DETN. COOL, DIL. TO 80L. WITH H SUB2 O, ADJUST AN ALIQUOT TO PH 3 WITH NAOH AND BOL TO REMOVCO SUB2. COOL, DIL. TO 100-50 ML AND TITRATE POTENTIOMETRICALLY WITH 0.02N NAOH TO PH 6.9. THEN ADD MANNITOL (10 G FOR EACH 100 ML OF SOLN.) AND TITRATE AGAIN TO PH 6.9 WITH THE SAME ALKALI. FACILITY: INST. CHEM. SILICATES, LENINGRAD, USSR.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--DIFFERENTIAL PHOTOMETRIC METHOD OF DETERMINING GERMANIUM -U-

AUTHOR-(02)-PIRYUTKO, M.M., KOSTYREVA, T.G.

COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB., 1970, 36, (3), 276

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--PHOTOMETRIC ANALYSIS, GERMANIUM, MOLYBDENUM COMPOUND, METAL COMPLEX COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0916 STEP NO--UR/0032/70/036/003/0276/0276

CIRC ACCESSION NO--AP0131502

UNCLASSIFIED

2/2 019 UNCLASSIFIED

CIRC ACCESSION NO--AP0131502 PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DIFFERENTIAL PHOTOMETRIC METHOD OF DETERMINING LARGE QUANTITIES OF GE IS DESCRIBED; THE METHOD IS BASED ON THE STUDY OF A GE-NO COMPLEX IN THE PRESENCE OF ACETONE AS STABILIZER, AND DIFFERS FROM EXISTING METHODS COMMONLY EMPLOYED FOR DETERMINING GE IN SMALL QUANTITIES. THE AVERAGE ERROR IN THE DETERMINATION IS SIMILAR TO 0.3PERCENT. PRACTICAL TESTS CONFIRM THE ADVANTAGES OF THIS METHOD OVER ITS PREDECESSORS.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--REACTION OF TRICHLOROPHOSPHAZOPERCHLOROETHANE WITH ARENESULFONAMIDES -U-

AUTHOR-(03)-KUKHAR, V.P., SEMENIY, V.YA., PISANENKO, N.P.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSCH. KHIM. 1970, 40(3), 557-61

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHLOROETHANE, ORGANIC PHOSPHORUS COMPOUND, SULFONAMIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0870 STEP NO--UR/0079/70/040/003/0557/0561

CIRC ACCESSION NO--AP0124533

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0124533

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REFLUXING AN EQUIMOLAR MIXT. OF ARSO SUB3 NH SUB2 AND CCL SUB3 CCL SUB2 N:PCL SUB3 IN PHCL 8-10 HR GAVE 100PERCENT HCL AND, AFTER PROLONGED EVACUATION AT 100DEGREES, CCL SUB3 C(:NSO SUB2 AR)N:PCL SUB3 (AR SHOWN): PH, OIL, B SUB0.05 180-2DEGREES, D PRIME20 1.6292; P,CLC SUB6 H SUB4, M. 102-4DEGREES; P,BRC SUB6 H SUB4, M. 109-11DEGREES; P,MEC SUB6 H SUB4, M. 104-6DEGREES; M,O SUB2 NC SUB6 H SUB4, M. 78-80DEGRESS; P,O SUB2 NC SUB6 H SUB4, M. 184-5DEGREES; 3,4,O SUB2 N(CL)C SUB6 H SUB3 M. 97-8DEGREES; 2,C SUB10 H SUB7, OIL. THE SAME WERE PREPD. FROM EQUIMOLAR MIXTS. OF PCL SUB5 AND CCL SUB3 C(:NSO SUB2 AR)NHPOCL SUB2 (I) IN REFLUXING C SUB6 H SUB6. THE PRODUCTS TREATED WITH 1 MOLE ACOH IN C SUB6 H SUB6 GAVE, AFTER 10 HR AT ROOM TEMP., I IN 46-90PERCENT YIELDS (AR GIVEN): P,MEC SUB6 H SUB4 M. 130-2DEGREES; O,CLC SUB6 H SUB4, M. 153-4DEGREES; P,CLC SUB6 H SUB4, M. 120-3DEGREES; P,BRC SUB6 H SUB4, M. 150-1DEGREES; M,O SUB2 NC SUB6 H SUB4, M. 168-70DEGREES; P,O SUB2 NC SUB6 H SUB4, M. 164-6DEGREES; 3,4,O SUB2 N(CL)C SUB6 H SUB3 M. 173-4DEGREES; 2,C SUB10 H SUB7, M. 179-80DEGREES. SIMILAR REACTION WITH H SUB2 O OF EITHER I OR THE PHOSPHAZOACYLS GAVE 80-90PERCENT CL SUB3 CCONHSO SUB2 AR (AR GIVEN): PH, M. 156-8DEGREES; P,MEC SUB6 H SUB4 M. 140-2DEGREES; P,CLC SUB6 H SUB4 M. 169-71DEGREES; P,BR,C SUB6 H SUB4, (M. 163-6DEGREES); M,O SUB2 NC SUB6 H SUB4, (M. 167-8DEGREES); P,O SUB2 NC SUB6 H SUB4, (M. 210-11DEGREES); 3,4,O SUB2 N(CL)C SUB6 H SUB3 (M. 149-50DEGREES); 2,C SUB10 H SUB7 (M. 138-9DEGREES). HOT H SUB2 O GAVE ARSO SUB2 NH SUB2.

UNCLASSIFIED

USSR P UDC 546.185

SHEVCHENKO, V. I., KOVAL', A. A., and PISANENKO, N. P.

"Phenoxylation of Trichlorophosphazo-1,1,2,2-tetrachloroalkanes and N-Dichlorophosphonyl-2,2-dichloroiminocarboxylic Acid Chlorides"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 5, May 70, pp 1005-1010

Abstract: Trichlorophosphazo-1,1,2,2-tetrachloroalkanes react with phenols at 80-130° to give triaroxyphosphazo-1,1,2,2-tetrachloroalkanes, which split at 130-170° into 2,2-dichlorocarbonitriles and triaroxydichlorophosphorus. Triaroxyphosphazo-1,1,2,2-tetrachloroalkanes are hydrolyzed with water to give 2,2-dichlorocarbonitriles and triaryl phosphates. The same compounds are obtained by the interaction of trichlorophosphazo-1,1,2,2,-tetrachloroalkanes with an excess of phenols at 130-170°. N-dichlorophosphonyl-2,2-dichloroiminocarboxylic acid chlorides react with phenols in the presence of triethylamine or with sodium arylates to give aryl esters of N-diaroxyphosphonyl-2,2-dichloroiminocarboxylic acids, which are readily hydrolyzed

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USSR

SHEVCHENKO, V. I., et al., Zhurnal Obshchey Khimii, Vol 40, No 5, May 70, pp 1005-1010

with water or atmospheric moisture to give stable diaryl esters of 2,2-dichlorocarbacylamidophosphoric acids.

The authors thank A. V. KIRSANOV for his advice.

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USSR

PISANETS, S. I.

"Compactness of a Sequence of Processes Defined by the Ito Stochastic Differential Equations"

Upravlyayemyye Sluchayn. Protsessy i Sistemy [Controlled Random Processes and Systems -- Collection of Works], Kiev, 1973, pp 305-312 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V67, by I. Gikhman).

Translation: A study is made of the equation

$$d\xi_n = a_n(\xi_n(t))dt + dw(t),\ \xi_n(0) = x, \tag{1}$$

where w(t) is a Wienerian process.

Theorem 1. Suppose functions $a_n(x)$ are such that equation (1) has a unique solution, $|a_n(x)| \leq K\sqrt{1+|x|^2}$, n = 1, 2,..., f(x) is an arbitrary limited continuous function. Then the set of functions $M_x f(\xi_n(t))$, $x \in [-N, N]$, $t \in \left[0, \frac{1}{16K^2}\right]$ is equicontinuous $(\forall N > 0)$.

1/2

USSR

Pisanets, S. I., Upravlyayemyye Sluchayn. Protsessy i Sistemy, Kiev, 1973, pp 305-312.

It is proven, with the preceding assumptions concerning functions $a_n(x)$, that a subsequence of indices n' can be selected such that $\xi_{n'}(t)$ in a certain sense converges on a Markov process.

2/2

1/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--WAYS AND METHODS OF REHABILITATION OF INVALIDS WITH A PATHOLOGY OF THE ORGAN OF VISION IN BYELORUSSIA -U-

AUTHOR-(03)-BIRICH, T.V., BIRAN, V.P., PISARENKO, D.K.

COUNTRY OF INFO--USSR

SOURCE--ZDRAVOOKHRANENIYE BELORUSSI, 1970, NR 4, PP 86-89

DATE PUBLISHED----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--EYE DISEASE, BLINDNESS, REHABILITATION, GEOGRAPHIC LOCATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1851 STEP NO--UR/0477/70/000/004/0086/0089

CIRC ACCESSION NO--AP0129211

UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129211

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SUCCESSFUL RESOLUTION OF THE PROBLEM OF REHABILITATION OF INVALIDS WITH AN EYE PATHOLOGY TO A CERTAIN DEGREE DEPENDS UPON AN INSUFFICIENT REGISTRATION OF THE BLIND AND THE CAUSE OF BLINDNESS AND EYE WEAKNESS, AND ALSO PERFECTION OF THE METHODS OF MEDICAL PROFESSIONAL REHABILITATION OF INVALIDS DUE TO THE VISUAL ORGAN PATHOLOGY. SPECIAL ATTENTION HAS BEEN DRAWN TO A THOROUGH STUDY OF BLINDNESS AND EYE WEAKNESS IN CHILDREN AND ALSO TO THE PROBLEM OF RATIONAL WORK SUPPLY OF THE THIRD GROUP INVALIDS. FACILITY: KAFEDRA GLAZNYKH BOLEZNEY MINSK. MED. INST. AND N-I LABORATORIYA EKSPERTIZY TRUDOSPOSOBNOSTI INVALIDOV TRUDA MINISTERSTVA SOTSIAL. OBESPECHENIYA BSSR.

UNCLASSIFIED

PISARENKO, G. S. and LEBEDEV, A. A.

"Third International Conference on Rupture"

Kiev, Problemy Prochnosti, No 2, Feb 74, pp 121-123

Abstract: The Third International Conference on Rupture was held in Munich 8-13 April 1973. Over 900 scientists and specialists from 27 countries including the USSR, USA, England, Japan, Czechoslovakia, Canada, both Germanys, Italy, France and Poland took part in the work of the conference, hearing 296 reports. Subjects covered included: analysis of models of rupture based on representation of the mechanics of a continuum, linear mechanics and the kinetics of microstructural effects; individual aspects of the mechanics of rupture in the elastic-plastic stage, the study of the influence of various factors on the ductility of rupture and its relationship with other criteria; the concept of the criterion of crack opening; the development of new criteria such as the "deformation energy density"; experimental determination of the tendency of materials toward brittle rupture; fatigue rupture; technical applications; and the rupture of glass, ceramics, rock and concrete.

USSR

UDC 666.76:539.56

PISARENKO, G. S. and GOGOTSI, G. A., Institute of Problems of Strength, Academy of Sciences, Ukrainian SSR

"The Question of Evaluating the Brittleness of Refractory Materials"

Moscow, Ogneupory , No 2, Feb 74, pp 44-47

Abstract: The authors have devoted this article to discussing the question of the behavior of brittle refractory materials under a load. They make an attempt to classify the deformation diagrams of brittle materials and suggest the characteristics for evaluating their brittleness which are equal to the ratio of the elastic deformations to the total deformations measured at the moment of fracturing of the sample. The reason for the article is the lack of sufficient information on the tensile strengths under bending or compression, the moduli of elasticity, and the Poisson coefficients of refractory materials or other brittle materials intended for use as structural elements. The article contains 4 illustrations and 10 bibliographic references.

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USSR

UDC 534.1

PISARENKO, G. S., LI, V., and YAKOVLEV, A. P., Kiev, Institute of the Problems of Strength, Academy of Sciences UkrSSR

"To the Problem on the Investigation of the Influence of Correlations of Geometric Dimensions of a Cantilever Plate on the Plate-Like Forms of Vibrations"

Kiev, Problemy Prochnosti, No 9, Sep 73, pp 26-27

Abstract: An experimental investigation was made of the influence of the length to width ratio of a cantilever plate of constant thickness and rectangular cross-section on the ordinal number of the natural frequency at which the lowest plate-like form of vibrations develops. The installation, the method, and the results of the experimental determination of natural frequencies and plate-like vibrations are described. On the basis of experimental data, the dependence was established of the ordinal number of natural frequency of the lowest plate-like form of vibrations on the length to width ration of the plate. In dependence from this ratio, the position of the lowest plate-like form in the total spectrum of natural vibration forms of a cantilever plate can be determined from a suggested empirical formula. Two figures, one table, six bibliographic references.

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USSR

UDC 620.1.531.782

PISARENKO, G. S., TSVILYUK, I. S., Kiev

"Installation for Creep and Long-Term Strength Testing of Metals Under Deep Vacuum Conditions"

Kiev, Problemy Prochnosti, No 7, Jul 73, pp 108-110.

Abstract: The design and operating principle are described of a device allowing refractory metals and alloys to be tested for creep and long-term strength under deep vacuum conditions ($1 \cdot 10^{-8}$ mm hg) at temperatures up to 1400° C. The creep and long-term strength characteristics of the alloy Nb-4.5W-2Ta, tested at 1100° C with various depths of vacuum (10^{-5}-10^{-6} and 10^{-8} mm hg) are compared.

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CSO: 1861-W

- END -

USSR

UDC 539.3:534.1

PISARENKO, G. S., BOGINICH, O. Ye., SHEMEGAN, A. A.

"Calculation of Energy Scattering in Transverse Vibrations of Square Metal Plates With Damping Coatings and Loaded With a Concentrated Load"

V sb. Rasseyaniye energii pri kolebaniyakh mekh. sistem (Energy Scattering in the Vibrations of Mechanical Systems -- Collection of Works), Kiev, "Nauk. dumka", 1972, pp 20-38 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V232)

Translation: An equation is obtained for the forced vibrations of a square plate with damping coatings loaded by a concentrated load and induced by a harmonic force considering the nonlinearity of scattering of energy in the coating material. This equation describes vibrations of an equivalent single-layer plate with a load where the scattering of energy in the material is subject to empirically established relationships for a plate with damping coatings. By expanding the solution in terms of powers of the small parameter and using as a null approximation the solution of the problem of oscillations of hinge-supported plates with a load, the authors obtain first approximation formulas for the construction of an amplitude resonance curve. Calculations

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PISARENKO, G. S., et al, Rasseyaniye energii pri kolebaniyakh mekh. sistem, Kiev, "Nauk. dumka", 1972, pp 20-38

are given for a square plate (of D16ATV aluminum alloy) with a load in the center coated with textovinite. The calculated results are compared with experiment. 6 ref. Yu. G. Balakirev.

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USSR

UDC 624.07:534.1

PISARENKO, G. S., SHEVCHUK, A. D., BOGINICH, O. Ye., SHEMEGAN, A. A.

"On the Problem of Studying Energy Scattering in a Material Under High-Frequency Oscillations"

V sb. Rasseyaniye energii pri kolebaniyakh mekh. sistem (Energy Scattering Under Oscillations of Mechanical Systems -- Collection of Works), Kiev, "Nauk. dumka", 1972, pp 41-50 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V265)

Translation: A computational-experimental method is presented for determining the decrement in damping in a material under high-frequency vibrations. The basic idea of the method is that in the test process the resonance frequency shift of the sample is measured for different vibration amplitudes. The coefficients of the approximating polynomial showing the damping decrement as a function of stresses are determined from the resulting resonance skeleton curve. A sample calculation is given. 6 ref. I. Sh. Rakhmatulin.

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USSR

UDC 539.4

PISARENKO, G. S., LEBEDEV, A. A., KOVAL'CHUK, B. I., and LAMASHEVSKIY, V. P.

"Anistropy of the Mechanical Properties of Metal at Low Temperatures"

Khar'kov, Fiz. Mekhanizmy Plastich. Deform. pri Nizkikh Temperaturakh -- Sbornik (Physical Mechanisms of Plastic Deformation at Low Temperatures -- Collection of Works), 1971, p 55 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2V1252, Summary)

Translation: The article presents a discussion of the results of an experimental investigation of the influence of low temperatures upon the anisotropy of the mechanical properties of alloys AL19, D16T, and carbon steel type 45. On the basis of microstructural analysis data, the anisotropy of the aluminum alloys has both a homogeneous and an inhomogeneous nature. The anistropy of carbon steel (of the heterogeneous type) was attained by plastic deformation by means of elongation at normal temperature to $\varepsilon_{res} \approx 2\%$. The characteristics of the mechanical properties in the direction of the main axes of anisotropy were obtained at normal temperature and at temperatures of -100 and -180°. It is shown that as the temperature decreases, change of the elastic, strength, and deformation properties in the direction under consideration takes place unequally,

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USSR

UDC 539.4

PISARENKO, G. S., and IVANOV, A. A., Institute of Strength Problems, Academy of Sciences, Ukrainian SSR

"Particularities in the Behavior of Some Turbine-Blade Materials Under Conditions of Asymmetrical Loading"

Kiev, Problemy Prochnosti, No 1, Jan 72, pp 13-16

Abstract: The results of an investigation of the durability and vibration creep of steel 1Kh17N2Sh and alloys EI617 with high-frequency asymmetrical loading are described. Steel 1Kh17N2Sh was tested under conditions of normal temperature, while alloy EI617 was tested at normal temperatures and at elevated (370, 470°) temperatures. It was shown that the limit characteristics of low-frequency loading cycles of the material can be evaluated on the basis of high-frequency test data. On the basis of the obtained experimental data on fatigue and vibration creep, not only can results of practical importance be obtained, but in addition, essentially new information on the strength and deformation characteristics of the materials can become available. Four figures, 4 references.

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USSR

UDC 669.018.2:669-974

PISARENKO, G. S., LEBEDEV, A. A., KOVAL'CHUK, B. I., and LAMASHEVSKIY, V. P.

"Anisotropy of Mechanical Properties of Metals at Low Temperatures"

V sb. Fiz. mekhanizmy plastich. deform. pri nizk. temperaturakh (Physical Mechanisms of Plastic Deformation at Low Temperatures -- Collection of Works), Khar'kov, 1971, p 55 (from RZh-Metallurgiya, No 1, Jan 72, Abstract No 1I725 by I. Yeroshenkova)

Translation of Abstract: The authors investigated the effect of low temperatures (-100 and -180°) on the anisotropy of mechanical properties of AL19 and D16T Al alloys and carbon steel 45. Variations in elastic, strength, and deformation properties occur nonuniformly in different directions with a decline in temperature. More intense growth occurs in the direction which at normal temperature is characterized by fewer high parameters. Anisotropy of the metals declines on cooling, which is characteristic of a large group of metals.

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USSR

B O O K

605 P34 UDC 534.282

PISARENKO, GEORGIY STEPANOVICH

KOLEBANIYA MEKHANICHESKIKH SISTEM S UCHETOM NESOVERSHENNOY UPRUGOSTI MATERIALA (Vibrations of Mechanical Systems With Imperfect Elasticity of Material Taken Into Account), Kiev "Naukova Dumka" 1970, 377 pp, biblio, illus, 2,700 copies

In the treatment of those questions associated with the calculation of the oscillations of elastic systems with materials of imperfect elasticity, the monograph presents methods of describing inelastic couplings and methods of studying energy distribution during the oscillation of mechanical systems, and gives the results of an experimental study of the dispersion of energy within various materials, with several factors taken into account within a wide range of amplitudes of the cyclic stresses.

The monograph is intended for use by specialists and considers the general problem of damping oscillations with attention concentrated on those problems of computing the dispersion of energy in the material of the elastic elements within the nonlinear postulation of the theory of mechanical oscillatory systems. For the nonlinear differential equations used here, solutions are obtained according to the idea of asymptotic expansions in nonlinear mechanics.

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USSR
PISARENKO, G.S.
KOLEBANIYA MEKHANICHESKIKH SISTEM S UCHETOM NESOVERSHENNOY UPRUGOSTI MATERIALA
Kiev 1970

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PISARENKO, G.S., KOLEBANIYA MEKHANICHESKIKH SISTEM ...

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USSR

UDC 539.4

PISARENKO, G. S., NOVIKOV, N. V., Institute of Strength Problems, Academy of Sciences, Ukrainian SSR

"Current Problems in Research on the Carrying Capacity of Cryogenic Pressure Vessels"

Kiev, Problemy Prochnosti, No 8, 1970, pp 3-12

Abstract: The difficulties of the calculation and analytic evaluation of the carrying capacity of large-scale cryogenic pressure vessels due to the complex nature of loading, the influence of temperature and technological design factors upon the properties of the materials are stated. Consideration is given to the possibility of experimental evaluation of the carrying capacity of cryogenic pressure vessels by methods which take into account both the specific nature of the properties of the characteristic structural material and the special features of the

USSR

PISARENKO, G. S., et al, Problemy Prochnosti, No 8, 1970, pp 3-12

force and thermal loading of the vessels. The question of criteria for evaluation of the cold resistance of viscous metals is discussed, and it is proposed that an acoustic method be used for indicating the process of brittle and quasi-brittle destruction. There is a discussion of methods of the experimental study of the stress-deformed state and the strength of model and full-scale pressure vessels and cryogenic temperatures. 2 figures, 2 tables, 20 bibliographic entries.

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USSR

UDC 620.172.251.12

PISARENKO, G. S., KOVAL'CHUK, B. I., LEBEDEV, A. A., (Kiev)

"Plasticity of D16T Aluminum Alloy During Double Extension Under Low Temperature Conditions"

Kiev, Problemy prochnosti, No. 1, 1971, pp 45-59

Abstract: Results are presented from an experimental study of the influence of low temperatures on the deformation properties of D16T aluminum alloy in the planar stressed state. The tests were performed at + 20, - 100 and - 180°C by loading thin-walled tubular specimens with both axial tension and internal pressure. It was determined that the alloy has anisotropic elastic and plastic properties in the annealed state. The plasticity of the alloy is 45% higher, the Young modulus 9.5% lower in the direction of rolling than in the perpendicular direction. As the temperature drops, the anisotropy of both elastic and plastic properties decreases. The deformation ability of the alloy depends on the stressed state and temperature. As the temperature drops, plasticity increases. At normal and low temperatures, the minimum plasticity is observed when the ratio between primary stresses $\sigma_z/\sigma_\theta = 0.5$. The deformation curves

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USSR

UDC 620.172.251.12

PISARENKO, G. S., KOVAL'CHUK, B. I., LEBEDEV, A. A., (Kiev), Kiev, Problemy prochnosti, No. 1, 1971, PP 45-59

$\sigma_i = \Phi(\varepsilon_i)$, $\tau_{max} = f(\gamma_{max})$ are not invariant to the form of the stressed state. Decreasing the test temperature to - 180°C has no significant influence on the divergence of the curves.

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USSR

UDC: 531.66

PISARENKO, G. S., KRASOVSKIY, A. Ya., Kiev

"The Physical Theory of the Dynamic Yield Point of Crystalline Materials"

Kiev, Problemy Prochnosti, No 11, 1970, pp 6-13

Abstract: This work presents an evaluation of the contribution of the movement of dislocations to the dynamic yield point of structurally stable crystalline materials. The model of viscous retardation of high-speed dislocations leads to a realistic description of the microscopic phenomena in the initial stages of plastic flow of crystalline materials at high deformation rates. This indicates that the primary contribution to plastic flow is by superbarrier movement of dislocations. Data on the damping of elastic shock waves in materials can be logically interpreted with quantitative agreement of the retardation constants defined by various methods (including on the basis of attentuation of ultrasonic oscillations). This makes it possible to use data on the attentuation of elastic shock waves as an independent method for estimating the ratio of the viscous retardation constant of dislocations to the density of mobile dislocations B/N.

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USSR

UDC: 620.178.311.6

PISARENKO, G. S., BOGINICHO, Ye., Kiev

"Consideration of Energy Dissipation of Cyclicly Deformed Material Under Conditions of Planar Stressed State As Applicable to Transverse Oscillations of Plates"

Kiev, Problemy Prochnosti, No 9, 1970, pp 3-13

Abstract: In earlier works, the oscillations of mechanical systems with distributed parameters involving a planar stressed state have been performed by considering energy losses of the cyclicly deformed material on the basis of the principle of superposition as a function of the linear deformations in the direction of the principal stresses. Although this is a logical and simple method of calculation, the accuracy requires confirmation by performance of additional theoretical studies and calculations. These calculations are performed, illustrating that in practical calculations of oscillation of elastic systems considering energy dissipation in the material, use of the method based on the principle of superposition results in insignificant inaccuracies.

AN0026673

UR9013

TITLE-- THE PRIDE OF UKRAINIAN SCIENCE

NEWSPAPER-- PRAVDA UKRAINY, FEBRUARY 21, 1970, P 1, COLS 6-7

ABSTRACT-- G. S. PISARENKO, DIRECTOR, THE INSTITUTE OF PROBLEMS IN STRENGTH OF THE UKRAINIAN ACADEMY /SMCLN/ G. S. PISARENKO, UKRAINIAN ACADEMICIAN /SMCLN/ V. T. TROSHCHENKO, DEPUTY DIRECTOR OF THE INSTITUTE, CORRESPONDING MEMBER OF THE UKRAINIAN ACADEMY /SMCLN/ G. N. TRET'YACHENKO, DOCTOR OF TECHNICAL SCIENCES, BOTH DEPARTMENT CHIEFS OF THE INSTITUTE/SMCLN/ UKRAINIAN ACADEMICIAN A. S. DAVYDOV, DEPARTMENT CHIEF AT THE INSTITUTE OF THEORETICAL PHYSICS OF THE UKRAINIAN ACADEMY /SMCLN/ UKRAINIAN ACADEMICIAN F. D. OVCHARENKO /SMCLN/ N. N. KRUGLITSKIY, DEPUTY DIRECTOR, THE INSTITUTE OF COLLOIDAL CHEMISTRY AND CHEMISTRY OF WATER OF THE

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UKRAINIAN ACADEMY, DOCTOR OF CHEMICAL SCIENCES /SMCLN/ S. P. NECHIPORENKO, DOCTOR OF TECHNICAL SCIENCES, DEPARTMENT CHIEF OF THE INSTITUTE /SMCLN/ E. G. AGABAL, YANTS, CANDIDATE OF CHEMICAL SCIENCES, SCIENCE ASSOCIATE OF THE INSTITUTE /SMCLN/ I. A. SERIKOV, DIRECTOR, KHAR, KOV ENGINE CONSTRUCTION PLANT "SERPI MOLOT" /SMCLN/ A. D. POTEYKO, CHIEF ENGINEER OF THE PLANT /SMCLN/ L. M. KARAS, ACTING DEPUTY CHIEF ENGINEER OF THE PLANT /SMCLN/ B. S. YEREMENKO, DEPUTY CHIEF OF THE STATE SPECIAL DESIGN BUREAU, ET AL, HAVE BEEN AWARDED THE UKRAINIAN STATE PRIZES FOR 1969.

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19661724

AP0040918

PRIMARY SOURCE: Standarty i Kachestvo, 1970, Nr 1, pp 29-30

Ref. Code: UR 0422

Development of Method, Instrumentation and Nosins for Determination of Impact Strength of Crusching Elements Tovarov, V. V.; Oskalenko, G. N.; Pisarenko, I. S.

The currently valid GOST 7522—64 specifying castiron crushing cylinders and ellipsoids fails to provide a most important operational property, the impact strength. This property can be checked by means of a newly developed and manufactured set-up which requires 20 to 25 minutes to determine the relative impact strength of a perpesentative sample of the crushing elemens (25 specimens). The tests resulted in the selection of a method for the determination of impact strength and in recommendations concerning its normal values for introduction into GOST 7522—64.

MT

REEL/FRAME
19750657

USSR

Nuclear Physics

(4)

UDC 537.591.1

VERNOV, S. N., GRIGOROV, N. L., LIKIN, O. B., LOGAChEV, Yu. I., PISARENKO, N.F., SAVENKO, I. A., VOLODICHEV, N. N., and SUSLOV, A. A., Scientific Research Institute of Nuclear Physics, Moscow State University.

"Studies of Cosmic Radiation Aboard the Prognoz Satellites"

Moscow, Izvestiya Akademii Nauk SSSR, Fizika; Vol 37, No 6, 1973, pp 1138-1143

Abstract: Two Prognoz satellites were launched in April and June of 1972 into orbits with the following parameters: apogee -- 200,000 kilometers, perigee -- 950 kilometers, angle of inclination 65°. The satellites were launched toward the sun, the angles between projections of the apsides and the orbit through the plane of the ecliptic and the direction of the sun being 22 and 23 degrees, respectively. The angle between projections of the apsides of the two satellites was 77° in July 1972. The satellites served about six months each. Although they were in orbit during the decline in the 11-year solar cycle, their first months of observation coincide with an anomalous increase in solar activity. Background radiation was almost never recorded in these months. From April through September 1972, interplanetary space was filled with intensive streams of solar protons at energies of about 1 Mev. Higher energy protons were observed only during the August flares. The electron flow

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USSR

(4)

VERNOV, S. N., et al., Izvestiya Akademii Nauk SSSR, Fizika; Vol 37, No 6, 1973, pp 1138-1143

was well correlated with the protons. Absorbed radiation dose during this interval, except for 2-7 August, was steady at approximately 24 mrad per day.

Calculations from the uniform nature of the declines in intensity of solar proton activity indicate that the absorbing layer is at a distance of approximately two astronomical units from the sun. It is remarkable that the state of interplanetary space remained the same over a long interval, in spite of substantial manifestations of solar activity; when perturbed, it recovered rapidly.

Increases in electron flow were observed several times without any corresponding increase in proton output, but every increase in proton output from the sun was accompanied by an increase in electron flow.

During intervals of low solar activity, the detectors which determined these correlations established a strong negative correlation between the counts of extra-solar protons at over 30 Mev and electrons under 500 kev.

The satellites recorded the intense solar activity of early August. An interesting phenomenon was the sharp increase in the flow of particles at all energies over the course of 2.5 hours early on 5 August. The peaks in the curves had particularly steep leading and trailing edges. It is theorized

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USSR

VERNOV, S. N., et al., Izvestiya Akademii Nauk SSSR, Fizika; Vol 37, No 6, pp 1138-1143

that this represented a magnetic "trap" with dimensions of approximately 0.1 au, traveling at approximately 2500 kilometers per second; the absence of any nucleons with $Z \geq 6$ indicates that the particles must all have been of solar origin.

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1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--KINETICS OF EPSILON CAPROLACTAM VINYLATION -U-

AUTHOR-(05)-KONONOV, N.F., ZARUTSKIY, V.V., POGORELOV, A.G., PISARENKO, V.N., KOSMINSKAYA, G.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(2), 412-15

DATE PUBLISHED----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--REACTION KINETICS, CAPROLACTAM, VINYL COMPOUND, ORGANIC SYNTHESIS, ACTIVATION ENERGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0893

STEP NO--UR/0076/70/044/002/0412/0415

CIRC ACCESSION NO--AP0124556

UNCLASSIFIED

2/2 020 UNCLASSIFIED

CIRC ACCESSION NO--AP0124556 PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF THE SYNTHESIS OF N,VINYLCAPROLACTAM (I) FROM C SUB2 H SUB2 AND CAPROLACTAM (II) WITH NA CAPROLACTAM CATALYST AT 125-45DEGREES WERE STUDIED. EXPTL. CONDITIONS WERE CHOSEN TO PROVIDE A NON RANDOMIZED COMPLETE FACTORIAL PLAN FOR THE VARIABLE TEMP., REACTION TIME, AND CATALYST CONCN. AT 2 LEVELS. WITH THE USE OF AN ITERATIVE METHOD, VALUES WERE CALCD. FOR THE PRE EXPONENTIAL FACTORS, ACTIVATION ENERGIES, AND REACTION ORDERS WITH RESPECT TO THE REACTANTS, FOR THE REACTIONS INVOLVED IN THE SCHEME II PLUS C SUB2 H SUB2 YIELDS I; II YIELDS RESINOUS PRODUCTS.

FACILITY: INST. ORG. KHIM., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 542.91:547.1'118

ZAKHAROV, L. S., PISARENKO, V. V., GODOVIKOV, N. N., and KABACHNIK, M. I., Institute of Heteroorganic Compounds, Academy of Sciences USSR

"Catalytic Phosphorylation of Polyfluorinated Alcohols. 1. Preparation of Tripolyfluoroalkyl and Arylpolyfluoroalkyl Phosphates"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, Nov 71, pp 2503-2509

Abstract: The authors found that phosphorus exychloride reacts with alcoholates of polyfluorinated alcohols in absolute ether at room temperature to give symmetric polyfluorotrialkyl phosphates. However, in the interaction of aryl chlorophosphates with alcoholates of polyfluorinated alcohols there is a rearrangement of ether radicals and the formation of a mixture of phosphates. Polyfluorotrialkyl phosphates are not decomposed by hydrogen chloride even during prolonged heating. This made it possible to check the catalytic activity of metal salts in the phosphorylation of polyfluorinated alcohols. Many salts of metals of groups I-III of the periodic system are effective catalysts. The catalytic effect was studied in detail by the authors in the phosphorylation of 1,1-dihydroperfluorobutyl alcohol with phosphorus oxychloride. Salts of

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USSR

ZAKHAROV, L. S., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, Nov 71, pp 2503-2509

group II metals are the most effective catalysts, with $CaCl_2$ and Mg the most convenient preparation-wise. Salts of group I metals are not as effective as salts of group II metals, but they can be used for preparative purposes (ammonium salts). It is suggested as a mechanism for the catalytic phosphorylation of polyfluorinated alcohols that nucleophilic attack on the phosphorus oxychloride molecule is facilitated as a result of the interaction of catalyst with phosphoryl group. A series of symmetric polyfluoroalkyl phosphates and arylpolyfluoroalkyl phosphates were synthesized by using the catalytic method devised for the phosphorylation of polyfluorinated alcohols.

Analysis of all the resultant compounds was performed at the Microanalysis Laboratory by TM. SHANINA, T. S. SEREBRYAKOVA and N. I. LARINA, whom the authors thank. The authors also thank A. G. OSHUYEV, YE. K. TSIRUL' and N. P. ANTONOVA for providing the specimens of polyfluorinated alcohols.

2/2

USSR

UDC Not given

KABACHNIK, M. I., GODOVIKOV, N. N., PISARENKO, V. V., ZAKHAROV, L. S., "Order of Lenin" Institute of Organo Elemental Compounds, Moscow, Academy of Sciences USSR

"A Method of Producing Polyfluoroalkyldichlorophosphates"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Zanki, No 18, 1970, Author's Certificate No 271518, filed 13 Mar 69, p 24

Abstract: This Author's Certificate introduces: 1. A method of obtaining polyfluoroalkyldichlorophosphates by interacting polyfluoroalkyl alcohol with phosphoryl chloride in the presence of heat. As a distinguishing feature of the patent, the process is simplified by carrying out the reaction in the presence of chlorides of metals in groups I, II and III of the periodic table. 2. The method described in (1) is distinguished by the fact that the phosphpryl chloride and polyflyoroalkyl alcohol are used in a ratio of 5:1, the process is carried out at a temperature of 70-120°C.

USSR

PISARENKO, V. F., POTAPENKO, G. D. UDC 535.37:548.736

"On the Question of the Luminescence of Eu^{3+} and Tb^{3+} Ions in NaF Single Crystals"

V sb. Peredacha energii v kondensirovan. sredakh (Energy Transfer in Condensed Media -- Collection of Works), Yerevan, 1970, pp 176-183 (from RZh-Fizika, No 7, Jul 71, Abstract No 7D798)

Translation: A study was made of the excitation spectra and the dependence of the luminescence of Eu^{3+} ions on lifetime and temperature in NaF Crystals. It was shown that the excitation spectra for the luminescence of europium ions in crystals activated by Eu^{3+} and Eu^{3+} together with Tb^{3+} were identical. It was concluded that energy transfer from Tb^{3+} ions to Eu^{3+} ions does not occur in NaF crystals activated by Eu^{3+} and Tb^{3+} ions at room temperature. 5 ref. V. S. Z.

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USSR

UDC 542.97:547.1'118

KABACHNIK, M. I., GODOVIKOV, N. N., PISARENKO, V. V., and ZAKHAROV, L. S., Institute of Metal Organic Compounds, Acad. Sc. USSR

"Preparation of Polyfluoroalkyl Esters of Alkyl and Aryl Phosphonates"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, Jul 72, pp 1667-1669

Abstract: Phosphorylation of polyfluoroalkanols with acid chlorides of the alkyl- or arylphosphonic acids is catalyzed by the metal salts of the II group of periodic system. A series of polyfluoroalkyl esters of alkyl and arylphosphonic acid has been obtained by this reaction in quite a pure state.

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PISAREV, A.M.

Computers

So: JPRS 56049
19 May 1972

STANDARDIZATION AND SYSTEMS ORGANIZATION OF ECONOMIC PLANNING DOCUMENTATION

UDC 658.516:657.1/.3

[Article by A.M. Pisarev, Main Computation Center of the USSR State Planning Committee; Moscow, Standarty i Kachestvo, Russian, No 3, 1972, pp 10-12]

The most important areas of construction of automated systems in the field of accounting, planning and control must include the creation of standardized documentation systems, including the united system of standardized economic planning documents. This system on a broad scale permits organization of machine processing of the economic planning data. It will serve as a basis for information supply of the planning calculation system and also interaction of the planning apparatus on all its levels and in all its elements with the machine data processing system.

At the present time the main computation center and the divisions of the USSR State Planning Committee are performing operations with respect to the creation of a united standardized documentation system for compiling national economic plans. This system is developing in connection with the automated planning calculation system.

Let us consider some theoretical aspects connected with the improvement of administrative documentation.

In the sphere of control of the national economy, the documentation is a separate object and means of labor of administrative personnel and, like any means of labor, it requires constant improvement and rationalization. As the object of labor, documentation is closely related to the efficiency of the administrative processes. Its important properties has the element of scientific organization of administrative labor, its role in improvement of the productivity of labor and also the connection with techniques and equipment used in the given sphere are based on this.

The essence of the administrative documentation is determined by its information and legal aspects.

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Devices

USSR

UDC 621.314.61(088.8)

PISAREV, A.L.

"Device For Production Of Voltage For A Comparison System For Phase Control Of Static Converters"

USSR Author's Certificate No 261549, filed 30 Oct 68, published 25 May 70 (from RZh--Elektronika i yeye primeneniye, No 3, March 1971, Abstract No 3B593P)

Translation: In order to enlarge the range of control of the duration of square pulses, with conservation of the limiting symmetry of the minimum and maximum turn-on angles of power thyristors, the input of the transistorized amplifier is connected across the source of control voltage and a rectifier [vypryamitel'] to an additional source of a-c voltage, shifted with reference to the voltage of the secondary winding of the transformer by 90°. 2 ill.

1/1

USSR

UDC: 8.74

BROVCHENKO, L. A., KALASHNIKOV, V. I., PISAREV, A. P.

"Determination of Distinctive Features by the Method of Random Walks"

Vestn. Khar'kov. politekhn. in-ta (Khar'kov Polytechnical Institute Herald), 1972, No 61, pp 24-27 (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V568)

Translation: The paper deals with the feasibility of using random walks over a receptor field to isolate informative features in pattern recognition. Organization of the random-walk process is described, and the results of modeling are presented. Authors' abstract.

1/1

USSR

UDC: 621.315.4

SHVARTSBURD, Ye. Ya., TROFILEYEVA, G. K., POPENENKOV, V. A., PISAREV, A. V.

"Enameled Aluminum Wires With Polyimide Insulation"

Kabel'n. tekhnika. Nauchno-tekhn. sb. (Cable Technology. Scientific and Technical Collection), 1970, vyp. 61, pp 8-9 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6V320)

Translation: Polyimide insulation is of interest because of its high resistance to heat. The authors point out the technological difficulties which had to be encountered in developing eluminum wires with polyimide insulation (chiefly the poor adhesion between a polyimide film and aluminum). The characteristics of wires developed with a double layer of polyesterimidopolyimide insulation are given. Two tables. N. S.

1/1

1/2 011 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--POSSIBLE REDUCTION IN THE INTERROW TREATMENTS OF THE POTATO BY THE USE OF HERBICIDES -U-

AUTHOR-(03)-PISAREV, B.A., ZAKHARENKO, V.A., GAMMADOV, K.A.

COUNTRY OF INFO--USSR

SOURCE--KHIM. SEL. KHOZ. 1970, 8(2), 120-2

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CIRC ACCESSION NO--AP0125318 PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN 1965-8, TESTS WERE CONDUCTED ON SANDY SOD-PODZOL SOIL; PH IN KCL, 5; HUMUS CONTENT, 1.4-1.6PERCENT. OF THE HERBICIDES APPLIED-HA: PROMETRYNE (1.5 AND 2 KG), REGLONE (0.9 KG), METURIN (3 KG), ARESIN (4 KG), THE MOST EFFICIENT WAS PROMETRYNE. THIS HERBICIDE USED WITH MECH. CULTIVATION MARKEDLY ENHANCED YIELDS. PROMETRYNE INCREASED TUBER WT. IN RELATION TO ROOT WT. SLIGHTLY. THE POTATO CROP., IRRESP. OF THE INTENSITY OF MECH. TREATMENT WAS HIGHER ON PLOTS SPRAYED WITH PROMETRYNE (AV. 223.6-39.4 QUINTALS-HA); MECH. CULTIVATION ALONE YIELDED ON AV. 202.7-21.3 QUINTALS-HA.

UNCLASSIFIED

USSR

PISAREV, D., Candidate of Medical Sciences

"The Importance of Remaining Calm"

Moscow, Trud, 21 Oct 70, p 3

Abstract: The diseases of civilization -- myocardial infarction, strokes, hypertension -- cause premature aging and excess deaths, especially in Western Europe and the United States. A major factor is the "rat race" and the emotional stress accompanying it. More than anything else, "noise pollution" due to excessive concentration of traffic, loud advertizing, and incessant flights of jet planes is making nervous wrecks of people living in the capitalist countries. The "acoustic crisis" is being handled differently in the socialist countries. In the USSR, for example, hygienists, city planners, safety engineers, and others, as well as many technological and medical research institutes, are working hard to devise ways of controlling noise. Interdepartmental commissions for noise control have been organized in all of the union republics, and appropriate legislation has been passed. Other problems cited by the author as having adverse effects on health are air pollution, automation of industry, failure to observe the rules for personal hygiene, poor nutrition, lack of exercise and sufficient rest, and "negative emotions." 1/1